

Chattanooga Regional ITS Architecture Update

Stakeholder Review Workshop

Kimley»Horn

December 13, 2016

Workshop Outline

Review of the Regional ITS Architecture Document

- Key Changes to the Document
- ITS Service Package Prioritization
- Review Stakeholder Comments

Discussion of Existing and Planned ITS Projects

- Existing and Planned ITS Projects in the Region

Discussion on Use and Maintenance of the Regional ITS Architecture

- Planning for Operations
- Architecture Conformance for Federal Funding
- Maintenance of the Regional ITS Architecture

What is ITS?

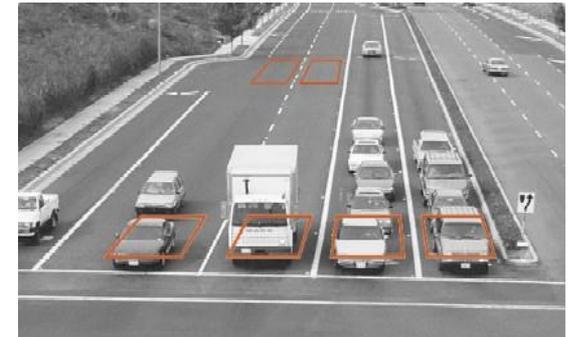
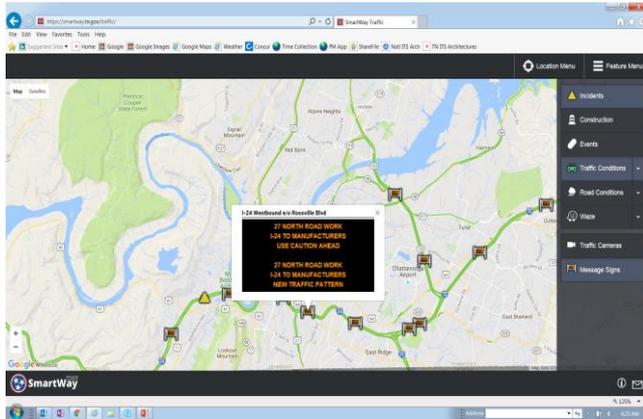
ITS:

An acronym that stands for Intelligent Transportation Systems.

One definition of ITS:

The application of data processing and data communications to surface transportation to increase safety and efficiency.

What is ITS?



Chattanooga Regional ITS Architecture Update Stakeholder Review Workshop

ITS Applications

Traffic Management

Traveler Information

Emergency Management

Maintenance & Construction Management

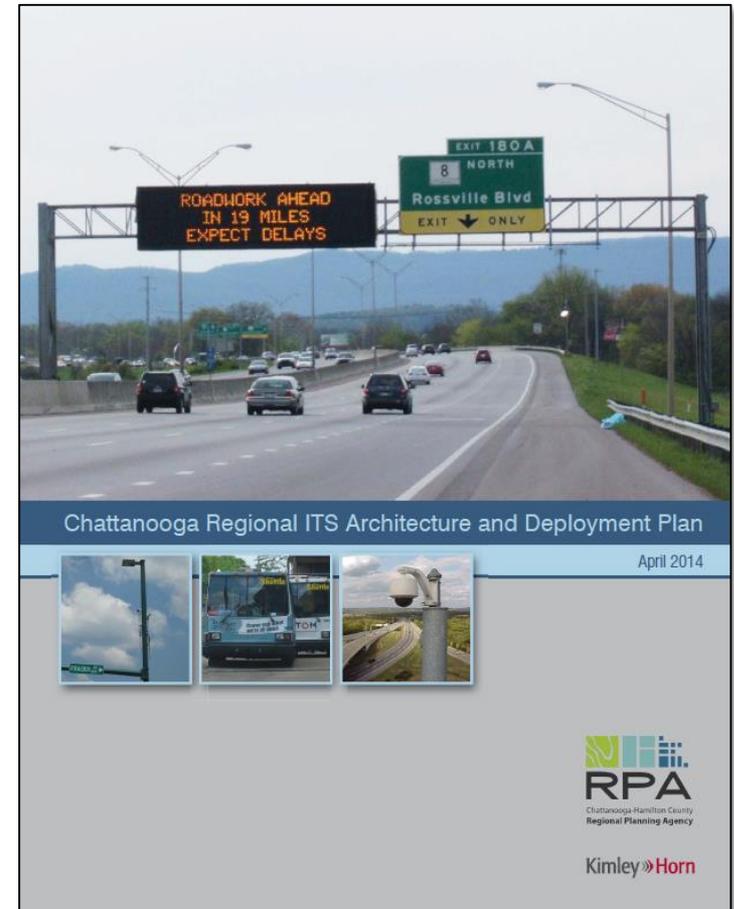
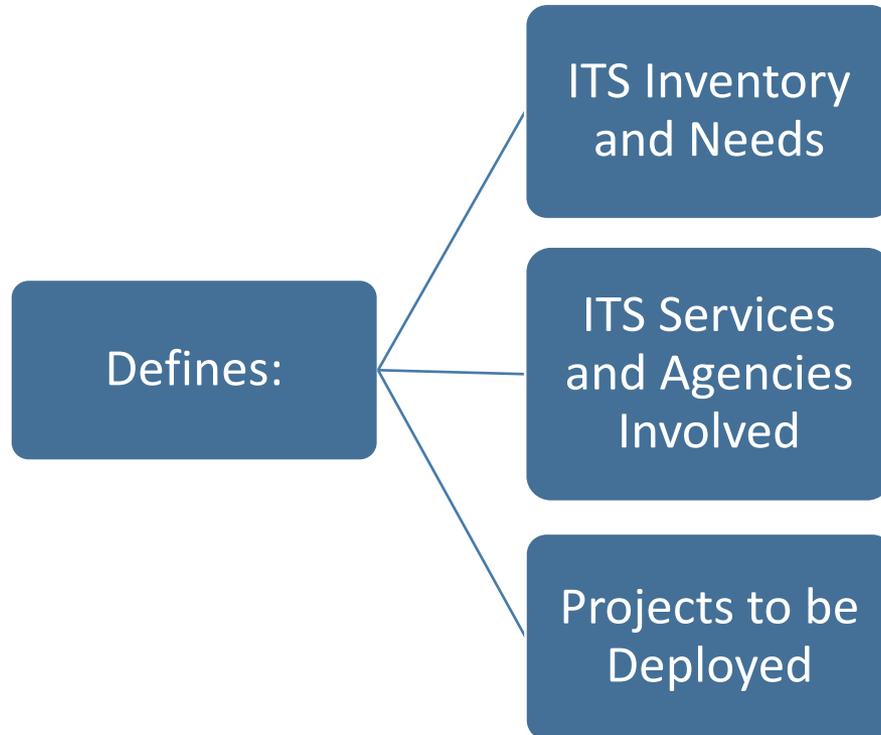
Public Transportation

Commercial Vehicle Operations

Archived Data Management

Vehicle Safety (Connected & Autonomous Vehicles)

Chattanooga Regional ITS Architecture



Last updated in 2014

Chattanooga Regional ITS Architecture Update Stakeholder Review Workshop

Regional Boundary

Chattanooga \ Hamilton County \ North Georgia
TPO Area

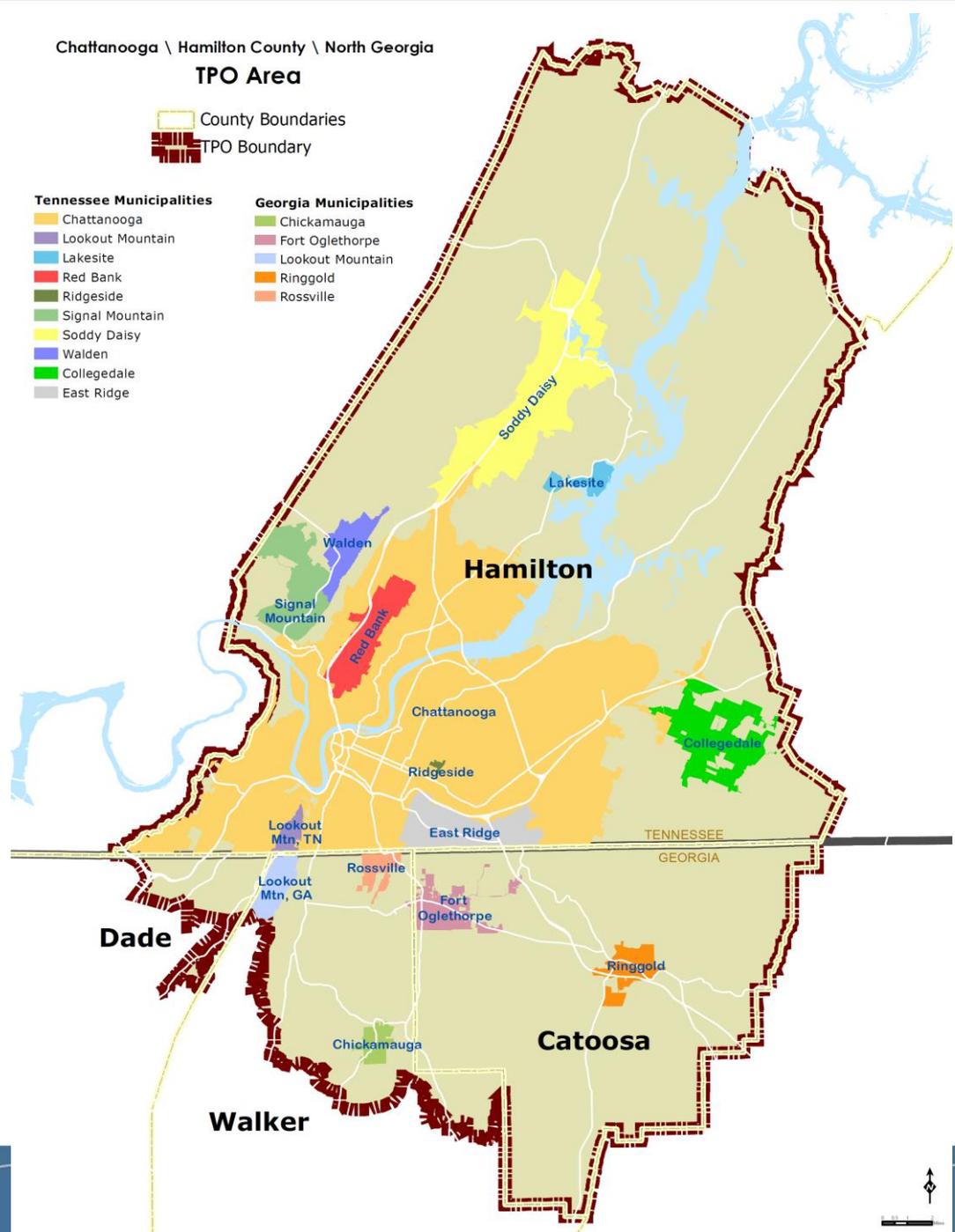
County Boundaries
TPO Boundary

Tennessee Municipalities

- Chattanooga
- Lookout Mountain
- Lakesite
- Red Bank
- Ridgeside
- Signal Mountain
- Soddy Daisy
- Walden
- Collegedale
- East Ridge

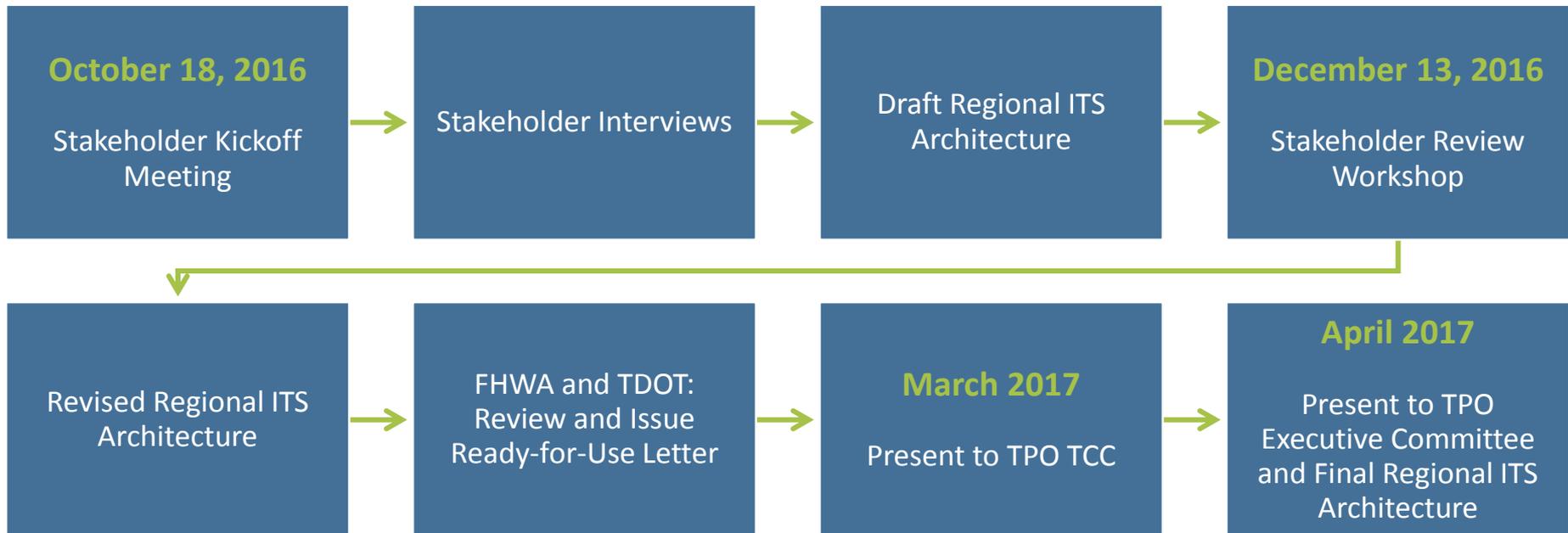
Georgia Municipalities

- Chickamauga
- Fort Oglethorpe
- Lookout Mountain
- Ringgold
- Rossville



Update Process

Schedule

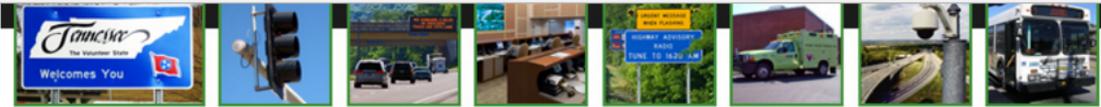


Project Website

Project Website Located at the Follow Link:

www.kimley-horn.com/Projects/TennesseeITSArchitecture/chattanooga.html

**Or Just Google
Chattanooga Regional ITS Architecture**



Kimley-Horn and Associates, Inc.
Kimley»Horn TENNESSEE REGIONAL ITS ARCHITECTURES AND DEPLOYMENT PLANS

- OVERVIEW
- STATEWIDE
- BRISTOL
- CHATTANOOGA
- CLARKSVILLE
- CLEVELAND
- JACKSON
- JOHNSON CITY
- KINGSPORT
- KNOXVILLE
- LAKEWAY
- MEMPHIS
- NASHVILLE

Chattanooga Regional ITS Architecture and Deployment Plan

The Chattanooga Regional ITS Architecture and Deployment Plan provides a long-range plan for the deployment, integration, and operation of ITS in the Chattanooga Region. An update of the plan is currently being led by the Chattanooga-Hamilton County North Georgia Transportation Planning Organization (CHCNGA-TPO) in coordination with the Tennessee Department of Transportation (TDOT). The update is expected to be completed in the spring of 2017.

The Chattanooga Regional ITS Architecture regional boundaries are defined as Hamilton County in Tennessee, Catoosa County in Georgia, and the northern portions of Dade and Walker Counties in Georgia. Stakeholders involved in the update include representatives from traffic, transit, emergency management, and public safety agencies at the local, state, and federal level. Two stakeholder workshops and several interviews with stakeholder agencies are being conducted to gather input for the plan.

Project Documents (2017 Version)

Regional ITS Architecture and Deployment Plan

- [Draft Chattanooga Regional ITS Architecture and Deployment Plan](#)
- [Draft Chattanooga Turbo Architecture Database \(In Development\)](#)
- [Draft Chattanooga Interactive ITS Architecture \(In Development\)](#)

Workshop Materials

- [Kickoff Workshop Agenda – October 2016](#)
- [Kickoff Workshop Minutes – October 2016](#)
- [Kickoff Workshop Presentation – October 2016](#)
- [Review Workshop Agenda – December 2016](#)
- [Review Workshop Minutes – December 2016 \(To be Added Later\)](#)
- [Review Workshop Presentation – December 2016 \(To be Added Later\)](#)

Other Documents and Presentations

- [ITS Overview Sheet – October 2016](#)
- [TPO Technical Coordinating Committee Presentation – March 2017 \(To be Added Later\)](#)
- [TPO Executive Board Presentation – April 2017 \(To be Added Later\)](#)



Project Contacts

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Regional ITS Architecture Update

**Comments Requested by
January 6, 2017**



Chattanooga
Regional ITS Architecture
and Deployment Plan

DRAFT

December 2016

A Chattanooga-Hamilton County/North Georgia Transportation Planning Organization Project

Prepared by:
Kimley»Horn

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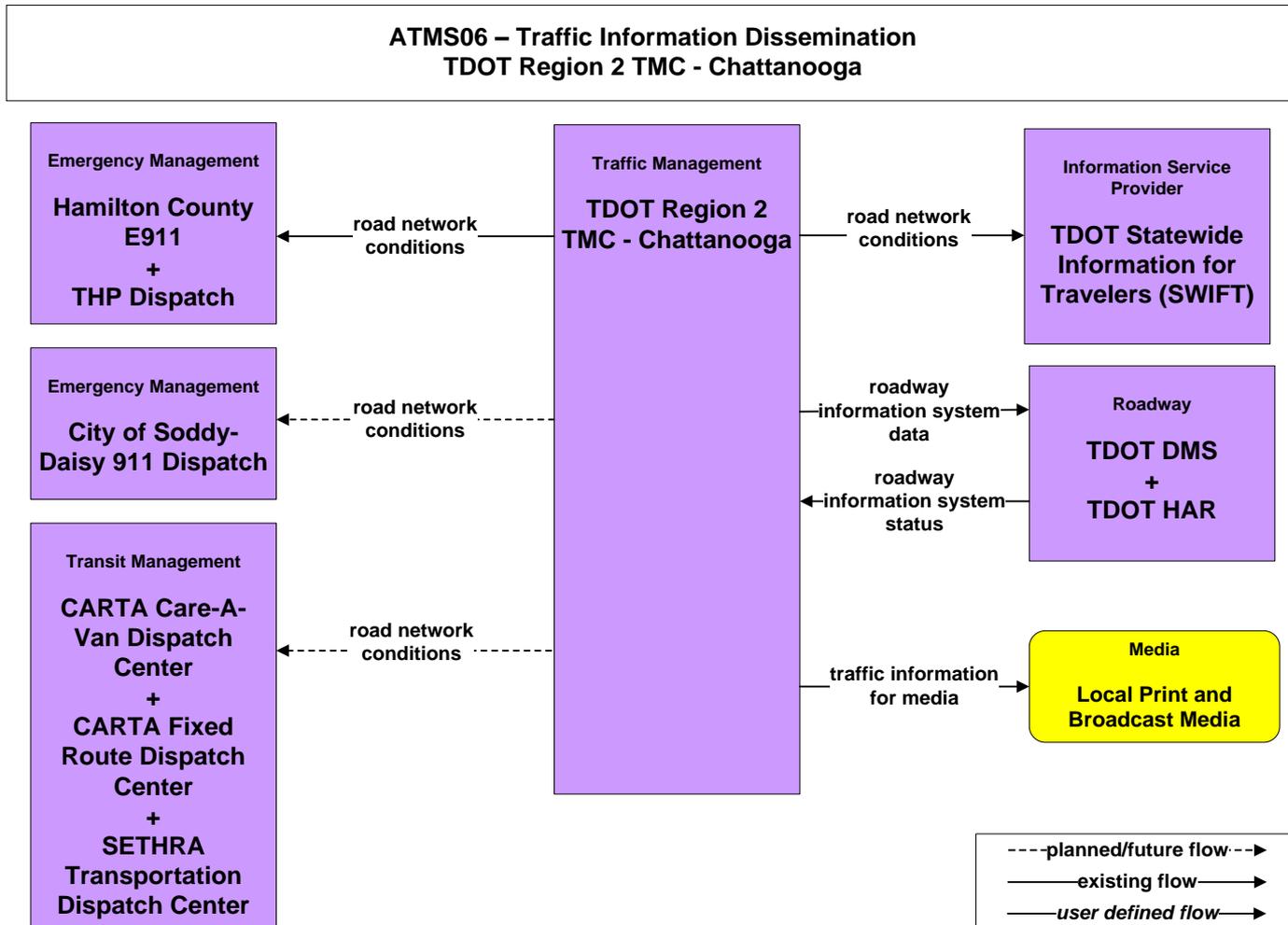
Regional ITS Architecture Update

- Updated the following areas:
 - ITS Needs
 - Status of ITS Elements (Several Planned Elements are now Existing)
 - ITS Service Packages (Updated Data Flows, Added New ITS Service Packages)
 - ITS Deployment Plan Projects
 - Use and Maintenance Guidance Including Systems Engineering Guidance
- Comments requested by January 6, 2017

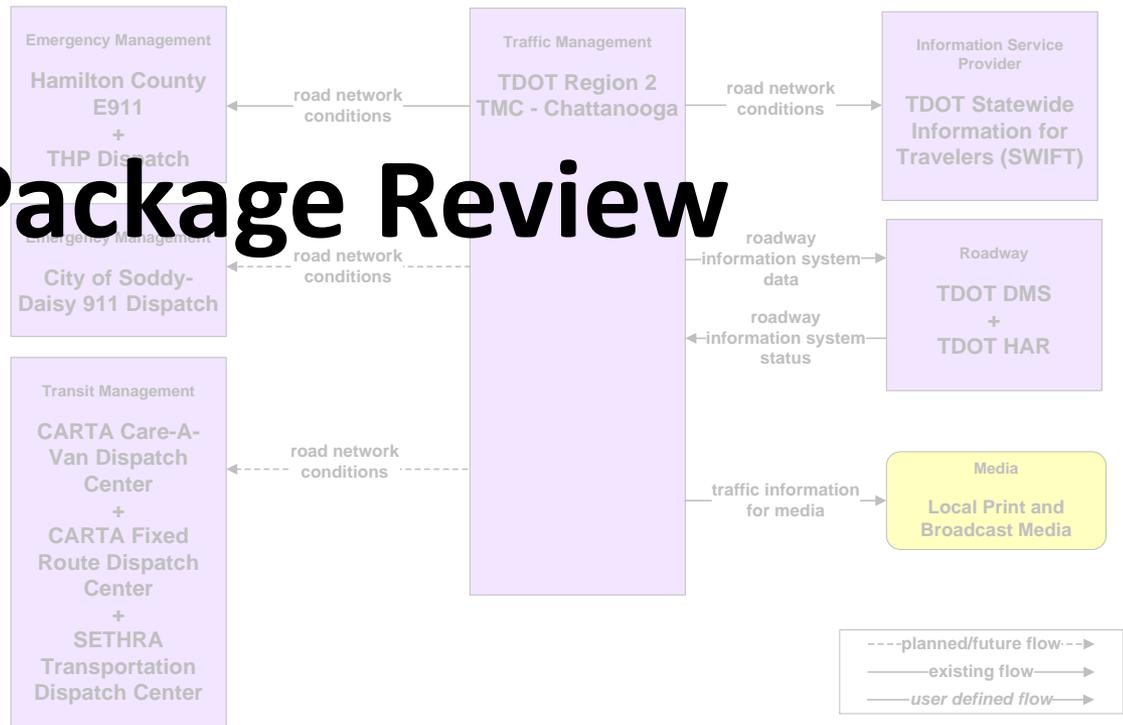
Regional ITS Architecture Service Package Changes

Chattanooga Regional ITS Architecture Service Package Updates		
Service Packages Added or Removed	Service Packages with Added, Removed, or Edited Elements	Service Packages with Changes to Data Flows Only
<p>ADDED:</p> <p>ATMS02 – Traffic Probe Surveillance (City of Chattanooga)</p> <p>ATMS09 – Transportation Decision Support and Demand Management (City of Chattanooga)</p> <p>ATMS15 – Railroad Operations Coordination (City of Chattanooga)</p> <p>ATMS16 – Parking Facility Management (CARTA)</p> <p>ATMS17 – Regional Parking Management (CARTA)</p> <p>ATMS21 – Roadway Closure Management (City of Chattanooga)</p> <p>ATMS26 – Mixed Use Warning Systems (City of Chattanooga)</p> <p>EM04 – Roadway Service Patrols (GDOT Statewide HERO Program)</p> <p>REMOVED:</p> <p>ATMS10 – Electronic Toll Collection (TDOT Region 2)</p>	<p>AD01 – ITS Data Mart (TDOT)</p> <p>APTS02 – Transit Fixed-Route Operations (CARTA)</p> <p>APTS03 – Demand Response Transit Operations (Dade County Transit)</p> <p>APTS03 – Demand Response Transit Operations (Walker County Transit)</p> <p>APTS03 – Demand Response Transit Operations (Catoosa Trans-Aid)</p> <p>APTS05 – Transit Security (CARTA Fixed Route)</p> <p>ATIS01 – Broadcast Traveler Information (SWIFT)</p> <p>ATIS02 – Interactive Traveler Information (Tennessee 511)</p> <p>ATIS02 – Interactive Traveler Information (TDOT SmartWay Website)</p> <p>ATMS01 – Network Surveillance (GDOT)</p> <p>ATMS03 – Traffic Signal Control (GDOT)</p> <p>ATMS06 – Traffic Information Dissemination (City of Chattanooga)</p> <p>ATMS06 – Traffic Information Dissemination (TDOT Region 2 TMC - Chattanooga)</p> <p>ATMS07 – Regional Traffic Management (GDOT)</p>	<p>ATMS08 - Traffic Incident Management System (TDOT Region 2 TMC – Chattanooga)</p> <p>ATMS08 - Traffic Incident Management System (GDOT)</p> <p>EM04 – Roadway Service Patrols (HELP and Protect the Queue Programs)</p> <p>EM10 – Disaster Traveler Information (Tennessee 511 and SWIFT)</p> <p>MC01 – Maintenance and Construction Vehicle and Equipment Tracking (TDOT Region 2 District Operations)</p> <p>MC03 – Road Weather Data Collection (TDOT RWIS)</p> <p>MC04 – Weather Information Processing and Distribution (TDOT Fog Management System)</p> <p>MC04 – Weather Information Processing and Distribution (TDOT Maintenance Headquarters)</p> <p>MC08 – Work Zone Management (TDOT Region 2 District Operations)</p> <p>MC10 – Maintenance and Construction Activity Coordination (GDOT)</p> <p>MC10 – Maintenance and Construction Activity Coordination (TDOT)</p> <p>APTS01 – Transit Vehicle Tracking (Catoosa Trans-Aid)</p> <p>APTS01 – Transit Vehicle Tracking (Dade County Transit)</p> <p>APTS01 – Transit Vehicle Tracking (Walker County Transit)</p> <p>APTS01 – Transit Vehicle Tracking (CARTA)</p> <p>APTS05 – Transit Security (SETHRA)</p> <p>APTS07 – Multimodal Coordination (CARTA)</p> <p>APTS09 – Transit Signal Priority (CARTA Fixed Route)</p> <p>ATIS01 – Broadcast Traveler Information (City of Chattanooga)</p> <p>APTS11 – Multimodal Connection Protection (CARTA Care-A-Van)</p> <p>ATMS01 – Network Surveillance (City of Chattanooga)</p> <p>ATMS13 – Standard Railroad Grade Crossing (City of Chattanooga)</p> <p>MC01 – Maintenance and Construction Vehicle and Equipment Tracking (City of Chattanooga)</p> <p>MC08 – Work Zone Management (City of Chattanooga)</p>

Example ITS Service Package



ITS Service Package Review



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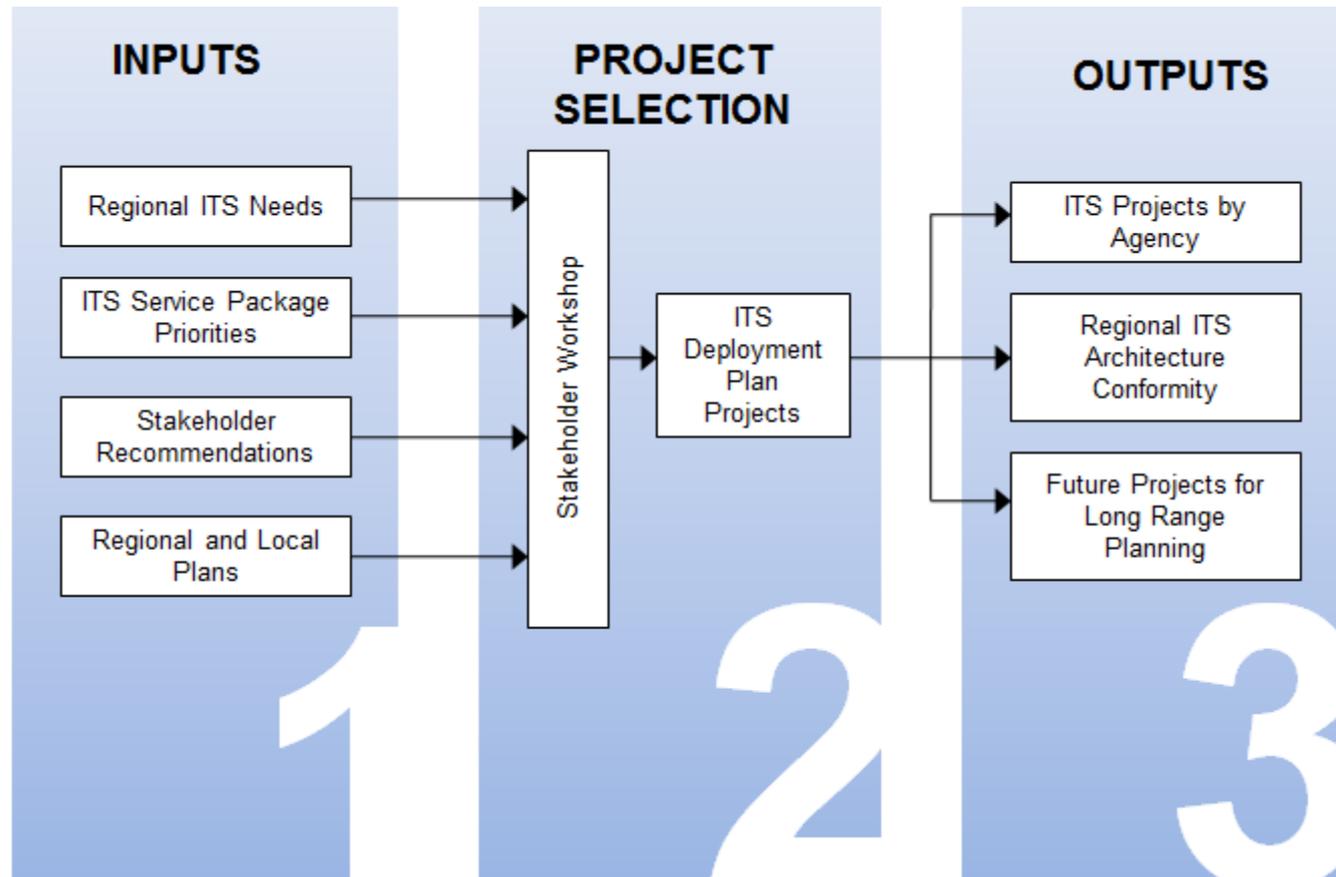
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Regional ITS Deployment Plan



Regional ITS Project Review



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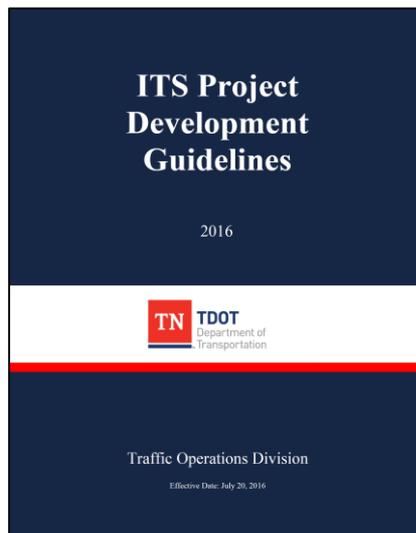
Systems Engineering

Definition

Systems engineering is an interdisciplinary approach to enable the realization of successful systems. It **focuses on defining customer needs and required functionality early** in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem.

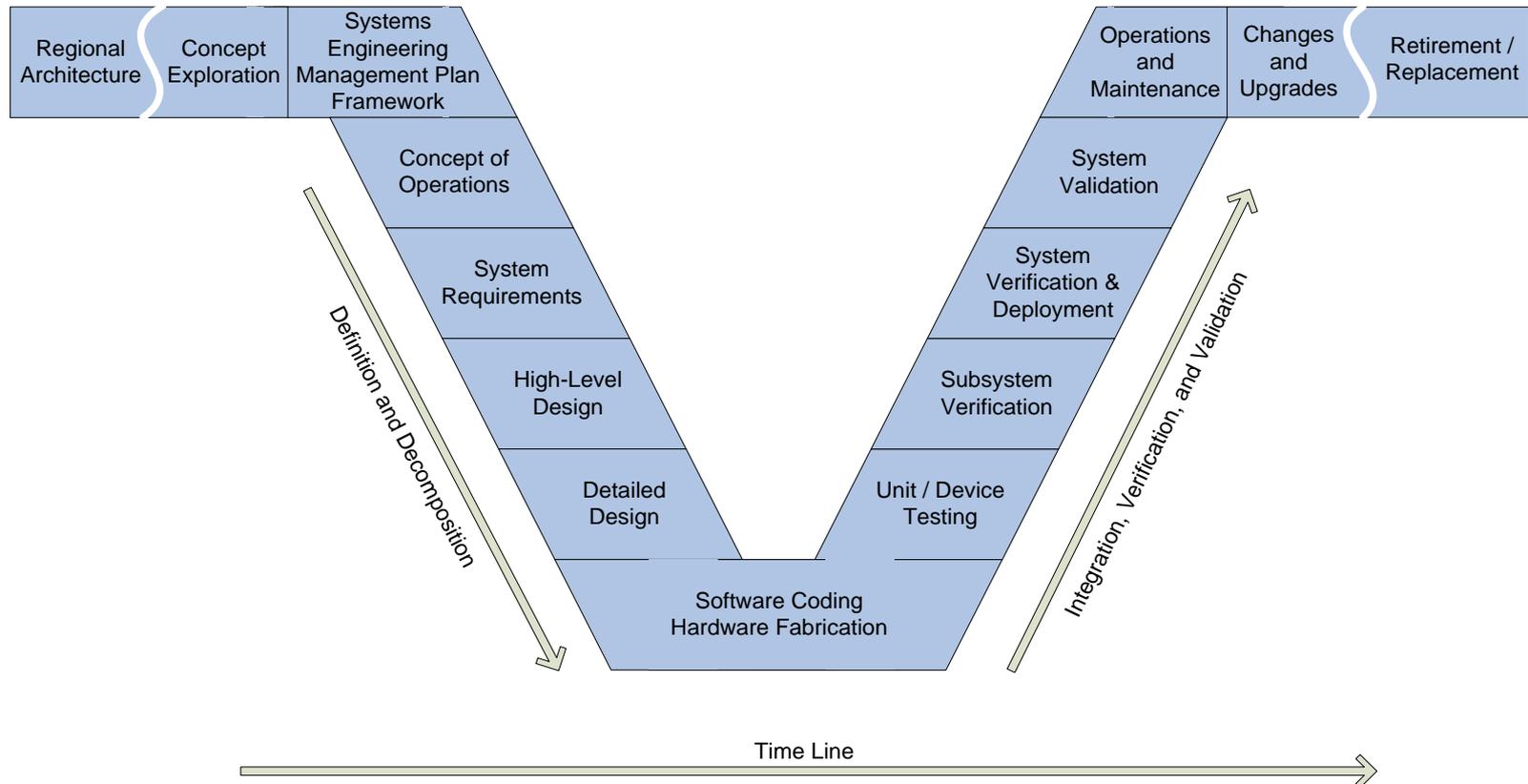
Requirements

Using a systems engineering approach is required by the USDOT for ITS projects. The process includes demonstrating conformance to the Regional ITS Architecture.



Guidance can be found in the
TDOT ITS Project Development Guidelines

Systems Engineering Vee Diagram



TDOT SEA Decision Process

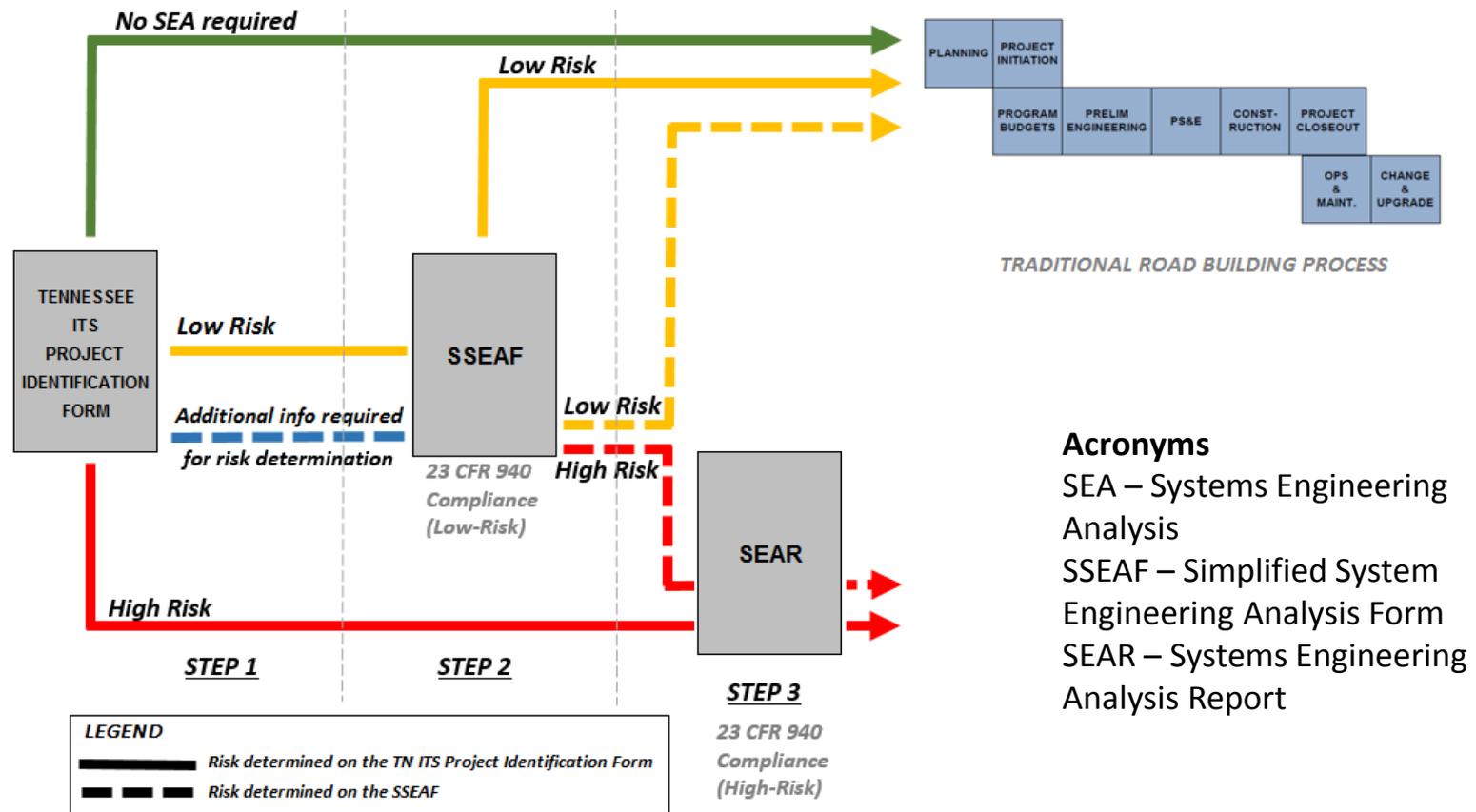


Figure 3 – TDOT’s process for ITS systems engineering documentation

Source: TDOT ITS Project Development Guidelines (2016)

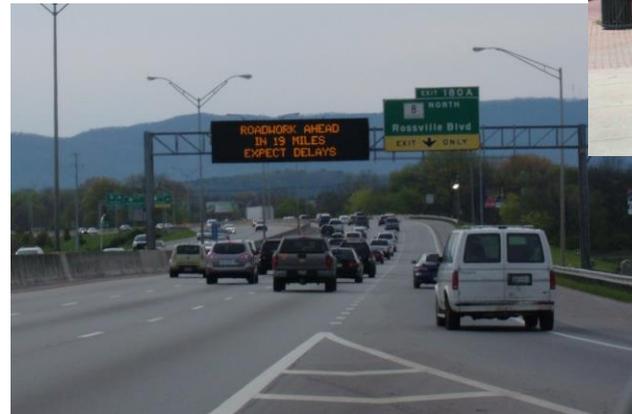
Regional ITS Architecture Maintenance

Chattanooga Regional ITS Architecture Maintenance Summary

Maintenance Details	Regional ITS Architecture and Deployment Plan	
	Minor Update	Full Update
Timeframe for Updates	As needed	Approximately every 4 years in the year preceding the LRTP update
Scope of Update	Review and update ITS service packages to satisfy architecture compliance requirements of projects or to document other changes that impact the Regional ITS Architecture.	Entire Regional ITS Architecture and Deployment Plan
Lead Agency	Stakeholder agency leading project that requires modification to ITS service package(s)	Chattanooga-Hamilton County/North Georgia TPO
Participants	Stakeholders impacted by ITS service package modifications	Entire stakeholder group
Results	ITS service package or other change(s) documented for next complete update	Updated Regional ITS Architecture and Deployment Plan document, Appendices, and Turbo Architecture database



Comments and Questions



Next Steps

- Stakeholders provide comments on the Draft Regional ITS Architecture and Deployment Plan Document by January 6, 2017
- Kimley-Horn incorporates comments and submits to FHWA and TDOT for “Ready for Use” review
- Obtain FHWA and TDOT “Ready for Use” letter and finalize documents
- Present final plan to the Chattanooga TPO TCC (March) and Executive Committee (April)



Chattanooga Regional ITS Architecture Update

Stakeholder Review Workshop

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